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SAMPLING AND ANALYSIS PLAN ADDENDUM AREA OF CONCERN 720 (AOC 720) ZONE G CNC CHARLESTON SC

1/14/2003

CH2M HILL

AOC 720 Zone G

Sampling & Analysis Plan Addendum

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January 14, 2003

Mr. David Scaturo
South Carolina Department of Health and
Environmental Control
Bureau of Land and Waste Management
2600 Bull Street
Columbia, SC 29201

Re: Sampling and Analysis Plan (SAP) Addendum for AOC 720 (Zone G)

Dear Mr. Scaturo:

Enclosed please find four copies of the SAP Addendum for AOC 720 (Zone G) of the Charleston Naval Complex (CNC). This document has been prepared pursuant to agreements by the CNC BRAC Cleanup Team for completing the RCRA Corrective Action process.

The principal author of this document is Louise Palmer. Please contact her at (704) 329-0072, extension 296, if you have any questions or comments.

Sincerely,

CH2M HILL

Dean Williamson, P.E.

cc: Dann Spariosu/USEPA, w/att
[redacted]
Gary Foster/CH2M HILL, w/att

Sampling and Analysis Plan Addendum

Area of Concern 720, Zone G

Oil/Water Separator

Charleston Naval Complex
North Charleston, SC

Prepared for

U.S. Navy Southern Division
Naval Facilities Engineering Command

Prepared by

CH2M-Jones

January 2003

Contract N62467-99-C-0960

Contents

Acronyms and Abbreviations

AOC	Area of concern
CNC	Charleston Naval Complex
CSI	Confirmatory Sampling Investigation
DPT	Direct-push technology
ft bls	Feet below land surface
mg/kg	Milligrams per kilogram
OWS	Oil/Water Separator
PCB	Polychlorinated biphenyl
PPE	Personal protective equipment
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
SAP	Sampling and Analysis Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SSL	Soil screening level
SVOC	Semivolatile organic compound
VOC	Volatile organic compound

1.0 Introduction

1.1 Background

An Oil/Water Separator (OWS) in the vicinity of former Building X12 in Zone G was identified as Area of Concern (AOC) 720 of the Charleston Naval Complex (CNC). A Confirmatory Sampling Investigation (CSI) for this unit was recommended in the *RCRA Facility Assessment (RFA), Revision 1, Charleston Naval Complex* (SOUTHDIV, 2001).

The *Confirmation Sampling Investigation Report for AOC 720, Zone G, Revision 0* (CH2M-Jones, 2002b) was submitted to the South Carolina Department of Health and Environmental Control (SCDHEC) on September 26, 2002. Sampling for the investigation was conducted in approximate accordance with the *Sampling and Analysis Plan, AOC 713 (Zone F) and AOC 720 (Zone G), Oil/Water Separators, Revision 0* (CH2M-Jones, 2002a). However, at the time of sampling, stockpiles of soil and rubble had been placed in the OWS area and some of the sample locations were shifted away from their proposed positions. This Sampling and Analysis Plan (SAP) Addendum is prepared to provide additional data to complete the site characterization.

1.2 AOC 720 Site Background and Setting

In the RFA, AOC 720 is defined as an OWS at Building X12. The OWS is associated with an equipment wash pad located approximately 150 feet south of Building X12, and approximately 110 feet southeast of Building 1431. Building X12 was previously used by the Navy as a Carpenter/Maintenance Shop and has been removed. Building 1431, a covered open-air concrete slab, was previously used by the Navy for small equipment storage and is currently used by contractors for the State of South Carolina Department of Transportation as a staging and field fabricating area. The OWS at AOC 720 and the equipment wash pad were not directly associated with operations at either Building X12 or Building 1431. The wash pad and the OWS are not in use.

Figure 1-1 illustrates the location of AOC 720 within Zone G at CNC. Figure 1-2 presents an aerial photograph of AOC 720, taken in 1997 before the surrounding buildings were removed.

The OWS at AOC 720 was located south of the 16 x 30-ft concrete wash pad and approximately 5-ft square equipment pad, which has recently been removed. The OWS was not evident from the surface and was not accessible (no manhole). Information regarding the configuration of the OWS is not available. PVC piping extending above grade south of the equipment pad was assumed to be used as part of the OWS operation; however, the piping was also recently removed.

The surface surrounding AOC 720 is level, unpaved land. It is currently used as a construction staging area. The surface in the OWS and former equipment pad area consists of coarse gravel. Surface runoff and groundwater from the AOC 720 area is believed to flow in a northerly direction toward the Cooper River, although a tidal component may exist to the groundwater flow; the site is within 700 feet of the Cooper River.

1.3 Proposed Additional Sampling and Analysis

Additional sampling of the environmental media surrounding the OWS is described in this section. Sampling and analysis methodology is described in Section 2.0 of this SAP Addendum.

1.3.1 Subsurface Soil

For the CSI, three subsurface soil samples (G720SB001, G720SB002, and G720SB003) were collected surrounding the OWS at a depth of 3 to 5 feet below land surface (ft bls), corresponding to the anticipated depth of the unit and the most likely zone for potential releases to be detected. These three samples were collected on the west, south, and east of the assumed OWS location. The originally proposed locations northwest and northeast of the unit were blocked by a stockpile of soil and rubble. Soil samples collected for the CSI at AOC 720 are shown in Figure 1-3.

The samples were analyzed for SW-846 volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, and polychlorinated biphenyls (PCBs)/pesticides. Analytical results were compared against the criteria described in the *Project Team Notebook and Instructions Charleston Naval Complex Environmental Restoration Project, Revision 1A* (CH2M-Jones, 2001).

As described in the CSI report, lead was detected at G720SB003 at a concentration of 890 milligrams per kilogram (mg/kg), which is substantially higher than the background range of 2.1 mg/kg to 76 mg/kg and the soil screening level (SSL) of 400 mg/kg. However, this sample also had a duplicate sample collected in the field as part of the sampling quality

control (QC) process, and the lead concentration in the field duplicate sample was 13 mg/kg, which is similar to the background concentrations. This duplicate sample concentration is also similar to the lead concentrations detected in G720SB001 and G720SB002 (7.9 and 4.2 mg/kg, respectively).

Two more subsurface soil samples will be collected in the vicinity of G720SB003 and analyzed for lead. These samples are intended to evaluate if the elevated lead in the initial sample is anomalous, as suspected. The proposed additional samples are presented on Figure 1-3.

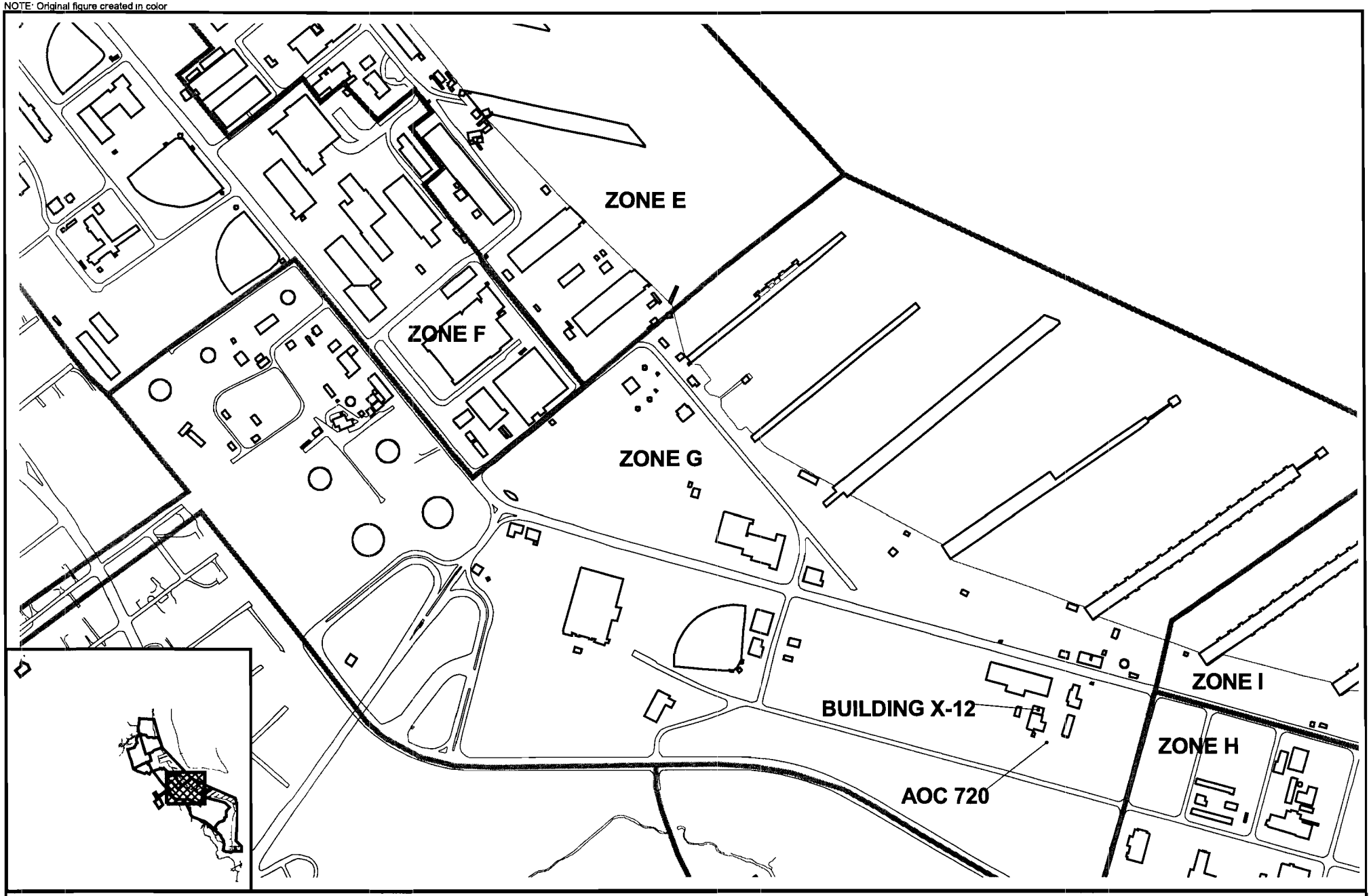
In addition, a subsurface soil sample will be collected north of the assumed OWS location, in the downgradient location, if the location is accessible. The sample will be analyzed for PCBs, pesticides, metals, VOCs, and SVOCs.

1.3.2 Groundwater

Data from two direct-push technology (DPT) locations are used to evaluate groundwater quality at AOC 720. Although three locations were designated for sampling in the *Sampling and Analysis Plan, AOC 713 (Zone F) and AOC 720 (Zone G), Oil/Water Separators, Revision 0* (CH2M-Jones, 2002a), no groundwater could be obtained from the low-permeability soils at the third location (adjacent to G720SB002). No chemicals of potential concern (COPCs) were identified in the other groundwater samples.

The originally proposed locations of the western and eastern groundwater samples were northwest and northeast of the unit, more downgradient of the assumed location of the unit, however those locations were blocked by a stockpile of soil and rubble at the time of sampling. The stockpile has since been removed. Therefore, an additional groundwater sample will be collected in the downgradient location shown in Figure 1-3, co-located with the subsurface soil sample. The sample will be collected by DPT method, and will be analyzed for PCBs, pesticides, VOCs, and SVOCs.

NOTE: Original figure created in color



Roads
Shoreline
Buildings
Zone Boundary

N

0 600 1200 Feet

1 inch = 600 feet

Figure 1-1
Location of AOC 720
Zones G
Confirmatory Sampling Investigation
Charleston Naval Complex

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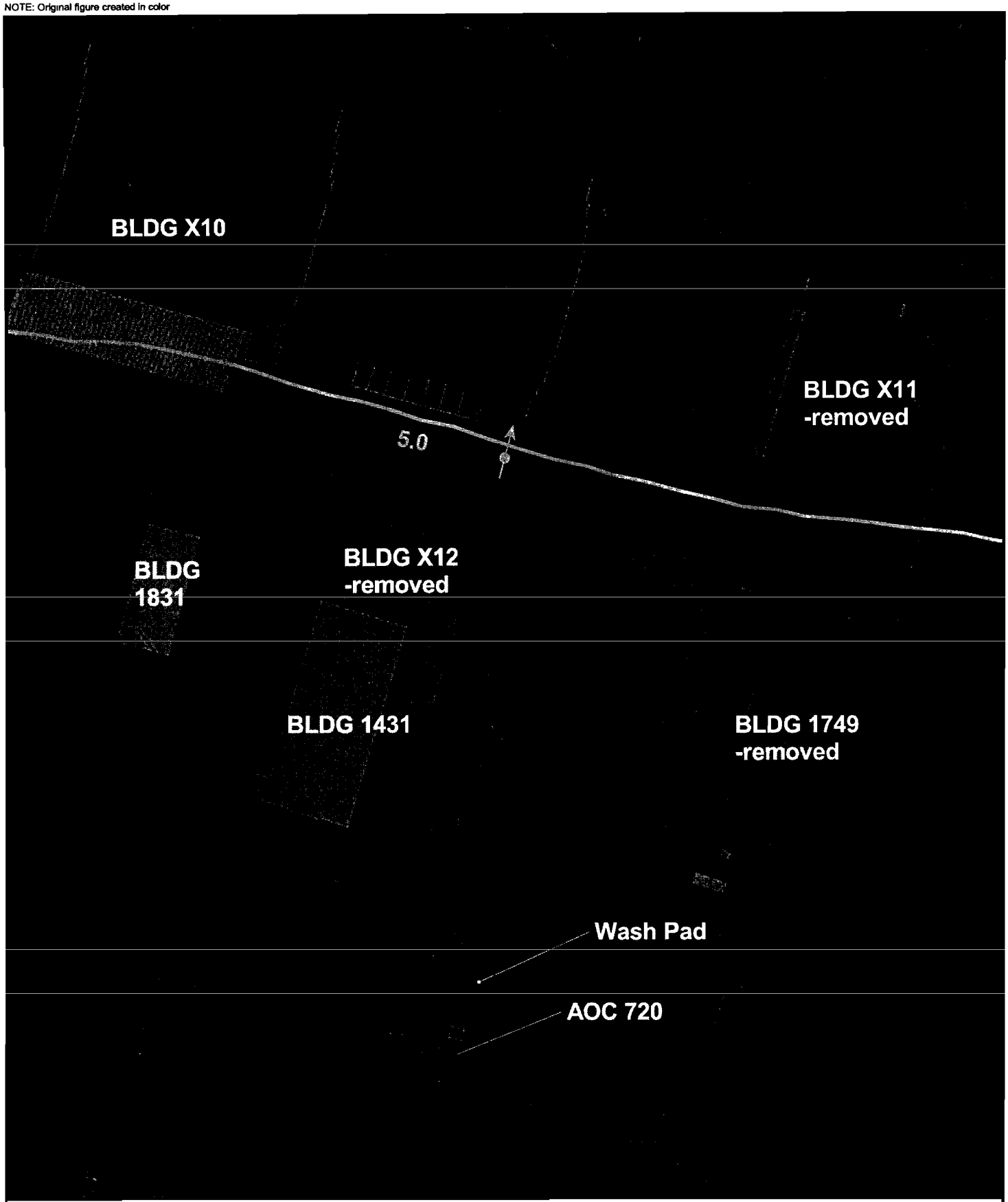
File Path d:\18gis\projects\zone_g\aoc720_fig1-1 apr, Date: 06 Sep 2002 9:38, User: DSANTOS, EGIS: Charleston Naval Complex - Figure 1-1 Location of AOC's 712,714,716 and 717

NOTE: Aerial Photo Date is 1997
NOTE: Original figure created in color



Known GW Contour
GW Flow Direction

N

0 50 100 Feet

1 inch = 50 feet

Figure 1-2
Aerial Photo of AOC 720

Confirmatory Sampling Investigation
Charleston Naval Complex

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File Path: D:\18gis\Projects\Zone_F\Aoc_713_Aoc_720\Aprs\aoc713&720 apr, Date: 27 Aug 2002 20 00, User: DSANTOS, EGIS: Charleston Naval Complex - Figure 3-1 Aerial Photo of AOC 720

NOTE. Original figure created in color

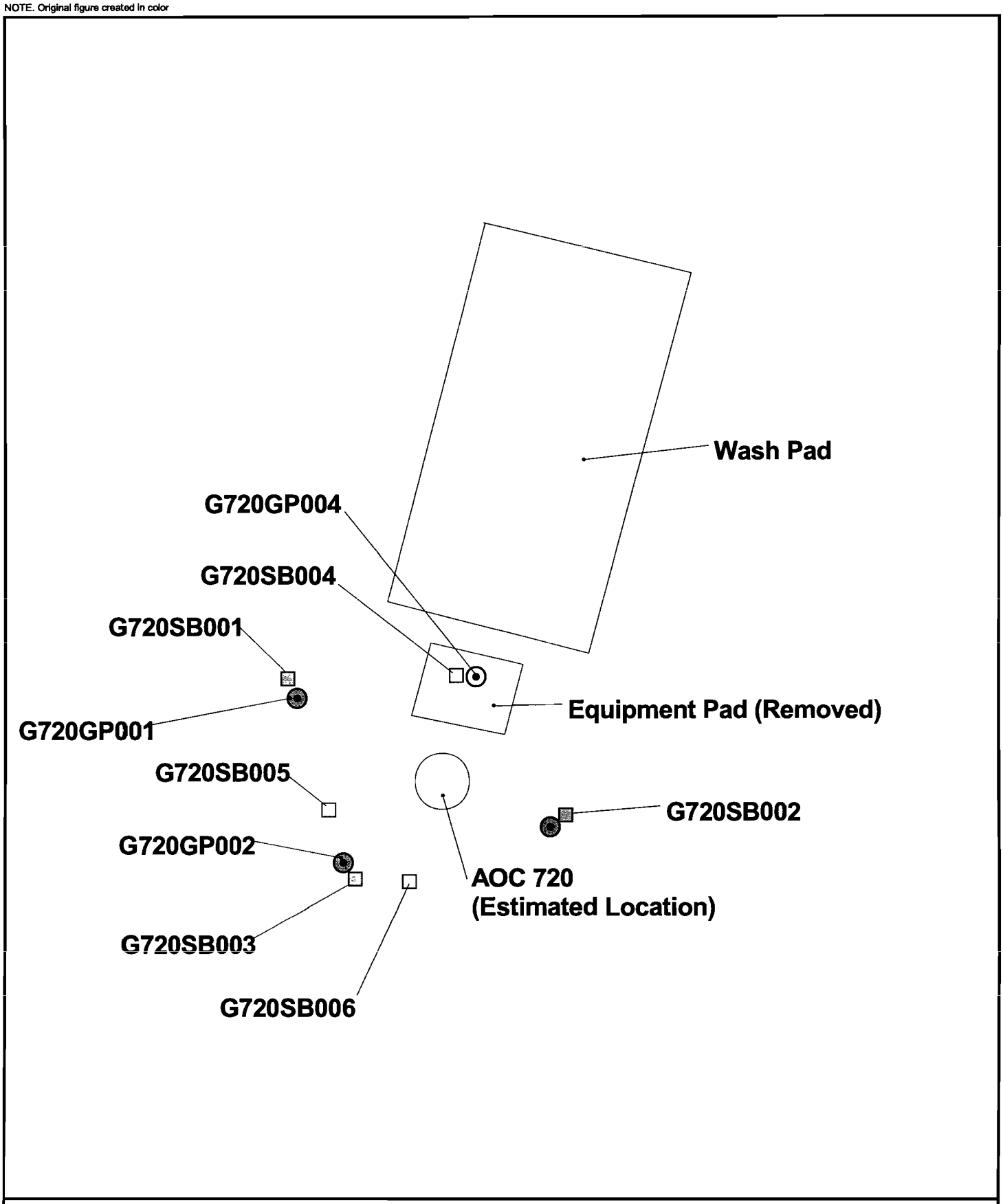

Figure 1-3
Additional CSI Samples
AOC 720 Sampling Plan Addendum
Charleston Naval Complex

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File Path d:\18gis\projects\zone_g\aoc_720\aoc720_fig1-3 apr, Date: 09 Jan 2003 10 28, User: DSANTOS, EGIS Charleston Naval Complex - Figure 1-3 Additional CSI Samples

2.0 Sampling and Analysis Methodology

This section provides information regarding the sampling and analysis methodology for the CSI sampling at AOC 720. All investigative work will be performed in accordance with the *Final Comprehensive Sampling and Analysis Plan RCRA Facility Investigation* (EnSafe/Allen & Hoshall, 1996). Table 2-1 presents a summary of additional samples to be collected for the CSI at AOC 720.

2.1 Health and Safety

CH2M-Jones places significant emphasis on the health and safety of our personnel, our subcontractors, and the local community. Once all personnel have arrived on site as part of the mobilization phase of the SAP, a project briefing and health and safety orientation meeting will be held. All work completed as part of this SAP will be performed in accordance with the CH2M-Jones *Site-Specific Health and Safety Plan* (CH2M-Jones, 2000).

Personnel working at the sites will be required to comply with Level D personal protective equipment (PPE) requirements, as specified in the Health and Safety Plan.

2.2 Site Clearance

To prepare for the start of onsite operations, CH2M-Jones will notify the necessary agencies and departments regarding planned activities at each project site.

CH2M-Jones will examine the sites for existing water, electrical, natural gas, telephone, and other utility lines that are potential hazards at the site. Utilities will be clearly marked and identified.

2.3 Waste Management and Disposal

Three waste streams will be generated as part of this SAP: soil cuttings, decontamination wastes, and used PPE. Soil cuttings from shallow borings will be characterized in accordance with South Carolina Hazardous Waste Management Regulations (South Carolina Department of Health and Environmental Control [SCDHEC] R.61-79.261) and disposed of in accordance with all applicable regulations and permits. Decontamination wastes and used PPE will also be disposed in accordance with applicable regulations.

2.4 Equipment Decontamination

Decontamination of personnel, sampling and removal equipment, and materials will be in accordance with the CH2M-Jones *Site-Specific Project Health and Safety Plan*.

2.5 Sampling Schedule

Sampling will be conducted within 60 days of approval of this SAP Addendum. After data are validated, the need for additional soil or groundwater samples will be evaluated. A revised CSI report will be prepared within 60 days of receipt of final validated data.

TABLE 2-1
Analytical Summary for CSI Sampling
Sampling and Analysis Plan Addendum, AOC 720, Zone G, Charleston Naval Complex

Medium	Depth	Location	Analytes
Subsurface Soil	3-5 ft bls	3 ft east of G720SB003	Lead
	3-5 ft bls	3 ft northwest of G720SB003	Lead
	3-5 ft bls	20 ft northeast of G720SB003	Metals, VOCs, SVOCs, PCBs/pesticides
Groundwater	-	20 ft northeast of G720SB003	VOCs, SVOCs, PCBs/pesticides

3.0 References

CH2M-Jones. *Site-Specific Health and Safety Plan*. 2000.

CH2M-Jones. *Project Team Notebook and Instructions Charleston Naval Complex Environmental Restoration Project*. Revision 1A. December 2001.

CH2M-Jones. *Confirmation Sampling Investigation Report for AOC 720, Zone G*. Charleston Naval Complex. Revision 0. September 26, 2002b.

CH2M-Jones. *Sampling and Analysis Plan, AOC 713 (Zone F) and AOC 720 (Zone G), Oil/Water Separators*. Charleston Naval Complex. Revision 0. March 29, 2002a.

EnSafe/Allen & Hoshall. *Final Comprehensive Sampling and Analysis Plan RCRA Facility Investigation*. 1996.

U.S. Environmental Protection Agency (EPA). *Environmental Services Division Standard Operating Procedures and Quality Assurance Manual (ESDSOPQAM)*. 1996.

South Carolina Hazardous Waste Management Regulations (South Carolina Department of Health and Environmental Control [SCDHEC] R.61-79.261)

SOUTHDIV. Department of the Navy. *RCRA Facility Assessment (RFA), Charleston Naval Complex*. February 2001.